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Sporulation in Amœba.—C. Scheel¹ describes and figures a most interesting method of reproduction in *Amœba proteus* observed in the winter of 1897–98. The conditions leading to this hitherto unknown method of rapid increase in this fresh-water Amœba could not be determined, nor could various experiments bring about the same results in material from the same locality, examined in 1898–99.

The Amœba was studied both alive and in prepared sections and a pretty complete series of stages obtained.

The creature draws in its pseudopodia, takes on a spheroidal form, and then secretes a cyst or case that ultimately shows three successive layers. Within this the Amœba rotates rapidly, once a second, in all directions with frequent change; it looks as if ciliated, but no evidence of cilia was found, and its motions may be due to pseudopodia. After several days this rotation ceases.

In one case a contracting vacuole was seen discharging rhythmically to the exterior, when the cyst was partly formed.

The nucleus divides into pieces, and when there are about 20–30 they become arranged near the surface. These in turn continue to divide until 500–600 small nuclei are formed in the outer part of the Amœba, while the central part has none. Cell walls appear about the nuclei, first about the outermost ones, and gradually the pieces of protoplasm so circumscribed separate as small Amœbas. These break out through the cyst, which has in the mean time become softened and broken up.

The whole process lasts from two and a half to three months.

In this way hundreds of small Amœbas, 10–14 μ in diameter, are set free at one time.

The author was able to isolate the young and rear them to recognizable *Amœba proteus* in two and a half to three weeks. E. A. A.

Notes.—The second number of Vol. I of the *Biological Bulletin* contains the following articles: "The Early Stages in the Development of the Hypophysis of *Amia calva*," by J. M. Prather; "An Extraordinary New Maritime Fly," by V. L. Kellogg; "On the Variation in the Position of the Stolon in *Autolytus*," by P. C. Mensch; "Gordiaceæ from the Cope Collection," by T. H. Montgomery, Jr.; and "A Preliminary Account of the Spermatogenesis of *Batrachoseps attenuatus*, Polymorphous Spermatogonia, Auxocytes, and Spermatocytes," by G. Eisen.

¹ Beiträge zur Fortpflanzung der Amœben. *Festschrift Carl von Kupffers*, Jena, 1899.

The first number of Vol. X of the *Journal of Comparative Neurology* contains "The Sense Organs of *Nereis virens*, Sars," by F. E. Langdon; "The Roof and Lateral Recesses of the Fourth Ventricle, Considered Morphologically and Embryologically," by J. A. Blake; "Observations on the Weight and Length of the Central Nervous Organs and of the Legs in Frogs of Different Sizes," by H. H. Donaldson and D. M. Schoemaker; and "A Report of the Neurological Seminar of the Marine Biological Laboratory, Woods Holl, Mass., for the Season of 1899," by A. D. Morrill. The number also contains an obituary notice of Fanny E. Langdon, by Professor Reighard, and the usual literary notices.

Miss K. J. Bush has published in the *Proceedings of the Academy of Natural Sciences* of Philadelphia a description of a number of new species of gastropods belonging to the genus *Turbonilla* from the western Atlantic fauna. The paper includes a synoptic list of species and a thorough revision of the synonymy, based upon examination of a number of museum collections.

Dr. S. Prowazek has published in Vol. XI of the Vienna *Arbeiten* a very exhaustive and fully illustrated account of the conjugation of *Bursaria truncatella*. He also contributes many interesting observations on the structure, nutrition, excretion, encystment, conjugation, division, and parasites of *Stylonychia pustulata*.

The Echinorhynchi parasitic in Cetacea have been brought together in a critical discussion by Shipley (*Arch. Paras.*, Vol. II, pp. 262-269).

In a paper on the Porocephali of the dog and some other mammals, Neumann¹ shows that, contrary to the generally accepted belief, the larval forms of these parasites are not accustomed to abandon their cysts, but probably perish in them, and that, except in rare cases, they are harmless to their hosts. The larval form of *P. constrictus*, which is recorded as a dangerous parasite of man in Africa, is probably as innocuous as other species, and certainly was not the cause of death in the cases reported.

A revision of the Echiurida and a discussion of their geographical range are appended by Shipley² to his account of the forms collected

¹ Neumann, G. Sur les Porocephales du chien et de quelques mammiferes. *Arch. Paras.*, tome ii, No. 3, pp. 356-361, 1899.

² Shipley, A. E. On a Collection of Echiurids, etc. A. Willey's *Zoöl. Results*, pt. iii, pp. 335-356, 1 plate, May, 1899.

by Dr. Willey. He lists a total of thirty-one good species, belonging four to *Bonellia*, four to *Echiurus*, one each to *Hamingia* and *Saccosoma*, and twenty-one to *Thalassema*, for which genus a good analytical key is given. From the geographical distribution some interesting points are excerpted. *Bonellia* favors warmer or temperate waters; *Echiurus*, colder regions in both hemispheres, without known species in connecting regions; *Hamingia* and *Saccosoma* are both northern forms. Of *Thalassema* the only species found outside of tropical and subtropical seas occur at points under the direct influence of the Gulf Stream.

A gape worm, *Syngamus*, has been reported by Railliet (*Compt. Rend. Soc. Biol.*, March 4, 1899), which, like that recorded by von Linstow (*Amer. Nat.*, Vol. XXXIII, p. 903), infests herbivorous mammals; it appears to be common in Annam cattle, but, unlike its avian congeners, harmless.

The rhynchodæal glands of *Tetrarhynchus* have been subjected to a careful study by Pintner.¹ These glands, which correspond to the greater part of the structures interpreted by Lang as rudimentary salivary glands, stand in close relation to the probosces, that is, to organs which are peculiar to a well-circumscribed group of animals aberrant in character. Their distribution, form, and chemical reaction show them to be most closely related to the cephalic glands of nemertines. They are neither cystogenic, nor mucous glands, and no evidence was found as to their real function.

Simondsia paradoxa, the extraordinary nematode described by Cobbold, has been found again by von Rätz (*Zeitschr. f. Thiermed.*, Bd. III, pp. 322-329), whose brief report covers chiefly pathological data.

A monograph on the Strongylidæ adds another to the valuable series of taxonomic summaries on groups of parasites, published by Stossich.² An analytical key to the subfamilies and genera is followed by descriptions of the species. The references to the literature on each species are particularly full, but the nomenclature is open to some criticism. A comprehensive list of hosts and a good index, including synonyms, add much to the usefulness of the paper.

¹ Pintner, Th. Die Rhynchodæaldrüsen der Tetrarhynchen. *Arb. Zool. Inst. Wien*, Bd. xii, pp. 1-24, 3 plates, 1899.

² Stossich, M. Strongylidæ. Lavoro monografico. *Bull. Soc. Adriat. Sci. Nat. Trieste*, vol. xix, pp. 55-152, 1899.